

CLAIMS

What is claimed is:

1. A method for editing a decomposed original video sequence, said decomposed original video sequence comprising one or more original camera-motion layers and zero or more original fixed-frame layers decomposed from an original video sequence, comprising the step of:
5 editing at least one of said original camera-motion layers to obtain modified camera-motion layers such that each frame of a composite modified video sequence composed from said modified camera-motion layers and said original fixed-frame layers is obtained without editing each frame of said original video sequence.

10 2. A method as in claim 1, wherein said step of editing said original camera-motion layers comprises the steps of:

15 converting one of said original camera-motion layers to an original image;
 editing said original image to obtain a modified image; and
 converting said modified image to one of said modified camera-motion layers.

20 3. A method as in claim 2, wherein said step of editing said original camera-motion layers further comprises the steps of:

rectifying said original image prior to editing said original image; and
20 rectifying said modified image prior to converting said modified image.

4. A method as in claim 1, wherein said step of editing said original camera-motion layers comprises the step of:

inserting a portion into, deleting a portion from, or changing a portion of one of said original camera-motion layers to obtain one of said modified camera-motion layers.

5. A method as in claim 1, wherein said step of editing said original camera-motion
5 layers comprises the step of:

replacing one of said original camera-motion layers with another camera-motion layer to obtain one of said modified camera-motion layers.

6. A method as in claim 1, wherein said step of editing said original camera-motion
10 layers comprises the step of:

adding a video sequence to one of said original camera-motion layers to obtain one of said modified camera-motion layers.

7. A method as in claim 1, wherein said step of editing said original camera-motion
15 layers comprises the step of:

adding an animation sequence to one of said original camera-motion layers to obtain one of said modified camera-motion layers.

8. A method as in claim 1, wherein said step of editing said original camera-motion
20 layers comprises the step of:

adding a three-dimensional object to one of said original camera-motion layers to obtain one of said modified camera-motion layers.

9. A method as in claim 1, wherein said step of editing said original camera-motion layers comprises the step of:

adding a user-activated region to one of said original camera-motion layers to obtain one of said modified camera-motion layers.

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10. A method as in claim 1, wherein said step of editing said original camera-motion layers comprises the step of:

modifying an on/off time of one of said original camera-motion layers to obtain one of said modified camera-motion layers.

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11. A method as in claim 1, wherein said step of editing said original camera-motion layers comprises the step of:

modifying an opaqueness of one of said original camera-motion layers to obtain one of said modified camera-motion layers.

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12. A method as in claim 1, wherein said step of editing said original camera-motion layers comprises the step of:

modifying fade-in/fade-out of one of said original camera-motion layer to obtain one of said modified camera-motion layers.

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13. A method as in claim 1, wherein said step of editing said original camera-motion layers comprises the step of:

modifying an ordering of one of said original camera-motion layers with respect to other layers of said decomposed original video sequence to obtain said modified camera-motion layers.

5 14. A method as in claim 1, wherein said step of editing said original camera-motion layers comprises the step of:

deleing one of said original camera-motion layers of said decomposed original video sequence.

10 15. A method as in claim 1, wherein said step of editing said original camera-motion layers comprises the step of:

adding another camera-motion layer to said decomposed original video sequence, such that an ordering of said original camera-motion layers with respect to other layers of said decomposed original video sequence is modified to obtain said modified camera-motion layers.

15 16. A method as in claim 1, wherein said step of editing said original camera-motion layers comprises the step of:

modifying a size of one of said original camera-motion layer to obtain one of said modified camera-motion layer.

20 17. A method as in claim 1, wherein said step of editing said original camera-motion layers comprises the step of:

editing camera motion parameters of one of said original camera-motion layer to obtain modified camera motion parameters.

18. A method as in claim 17, wherein said step of editing camera motion parameters
5 comprises the step of:

adjusting at least one of said camera motion parameters to obtain said modified camera motion parameters.

19. A method as in claim 17, wherein said step of editing camera motion parameters
10 comprises the step of:

replacing said camera motion parameters with analytically-derived camera motion parameters to obtain said modified camera motion parameters.

20. A method as in claim 17, wherein said step of editing camera motion parameters
15 comprises the step of:

replacing said camera motion parameters with camera motion parameters from another video sequence to obtain said modified camera motion parameters.

21. A method as in claim 1, further comprising the step of:

20 editing at least one of said original fixed-frame layers to obtain modified fixed-frame layers.

22. A method as in claim 21, wherein said step of editing said original fixed-frame layers comprises the steps of:

- converting one of said original fixed-frame layers to an original image;
- editing said original image to obtain a modified image; and
- 5 converting said modified image to one of said modified fixed-frame layers.

23. A method as in claim 22, wherein said step of editing said original fixed-frame layers further comprises the steps of:

- rectifying said original image prior to editing said original image; and
- rectifying said modified image prior to converting said modified image.

24. A method as in claim 21, wherein said step of editing said original fixed-frame layers comprises the step of:

- adding camera motion parameters to at least one of said original fixed-frame layers.

15 25. A computer comprising software to perform the method of claim 1.

20 26. A computer-readable medium comprising software to perform the method of claim 1.

27. An apparatus for editing a decomposed original video sequence, said decomposed original video sequence comprising one or more original camera-motion layers and zero or more original fixed-frame layers decomposed from an original video sequence, comprising:

means for editing at least one of said original camera-motion layers to obtain modified camera-motion layers such that each frame of a composite modified video sequence composed from said modified camera-motion layers and said original fixed-frame layers is obtained without editing each frame of said original video sequence.

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28. An apparatus as in claim 27, further comprising:

means for editing at least one of said original fixed-frame layers to obtain modified fixed-frame layers.

10 29. An apparatus for editing an original video sequence, comprising:

an object-based video encoder to decompose said original video sequence into a decomposed original video sequence, said decomposed original video sequence comprising one or more original camera-motion layers and zero or more original fixed-frame layers;

a video editor to edit at least one of said original camera-motion layers to obtain a decomposed modified video sequence; and

15 an object-based video compositor to compose said decomposed modified video sequence to obtain a composite modified video sequence, wherein each frame of said composite modified video sequence is obtained without editing each frame of said original video sequence.